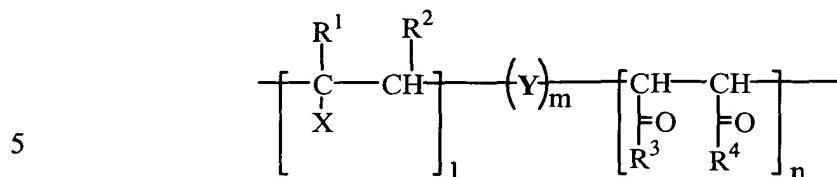


What is claimed is:

1. A concrete admixture additive having the formula:



wherein

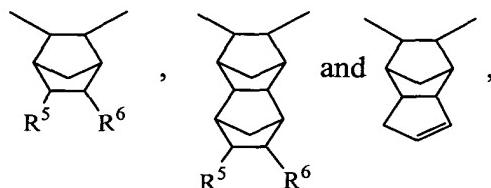
R^1 is hydrogen or methyl;

R^2 is hydrogen or methyl;

X is selected from the group consisting of C_6-C_{10} aromatic group, C_6-C_{10}
10 sulfonated aromatic group, C_5-C_6 cyclic alkyl group, and C_{1-10} alkoxy group;

Y is selected from the group consisting of C_2-C_5 saturated aliphatic group, C_2-C_5
unsaturated aliphatic group,

15



wherein R^5 and R^6 are respectively selected from the group consisting of hydrogen, halogen, C_{1-10} alkyl group, C_{6-10} aromatic group, C_{6-10} fluoroaromatic group, C_{1-10} alkoxy group, C_{2-10} alkenyl group, C_{7-11} aromatic alkyl group, C_{8-12} aromatic alkenyl group and
20 C_{7-11} alkyl aromatic group;

R^3 and R^4 are respectively selected from the group consisting of NHR^7 , OR^7 , OH and OM^+ , wherein M^+ is an alkaline metal cation, alkaline earth metal cation, or ammonium, R^7 is an oxyalkenyl or polyoxyalkenyl, having the formula $(ZO)_pR^8$, wherein Z is a C_2-C_5 aliphatic group, p is an integer from 5 to 100, and R^8 is a C_1-C_5 aliphatic group or C_6-C_{10} aromatic group;

1 is an integer from 0 to 25;
m is an integer from 0 to 25; and
n is an integer from 0 to 50;
provided at least two of l, m, and n are not zero.

5 2. The concrete admixture additive according to claim 1, wherein

l is an integer from 0 to 10;
m is an integer from 0 to 10; and
n is an integer from 0 to 25.

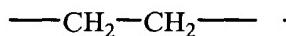
3. The concrete admixture additive according to claim 1, wherein

10 l is an integer from 0 to 5;
m is an integer from 0 to 5; and
n is an integer from 0 to 25.

4. The concrete admixture additive according to claim 1, wherein R¹ is hydrogen.

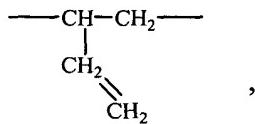
5. The concrete admixture additive according to claim 1, wherein R² is hydrogen.

15 6. The concrete admixture additive according to claim 1, wherein X is phenyl.
7. The concrete admixture additive according to claim 1, wherein X is sulfonated phenyl.
8. The concrete admixture additive according to claim 1, wherein Y is



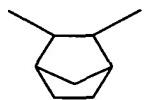
9. The concrete admixture additive according to claim 1, wherein Y is

20 $\text{---CH}_2\text{---CH=CH---CH}_2\text{---}$,



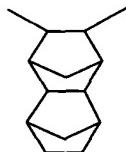
or a mixture of both.

25 10. The concrete admixture additive according to claim 1, wherein Y is



11. The concrete admixture additive according to claim 1, wherein Y is

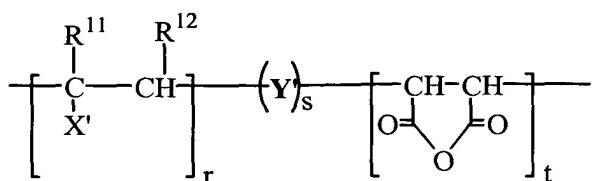
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12. A process for manufacturing a concrete admixture additive, comprising the steps of:

(a) preparing a first reagent containing 1~75% by weight of a polymer having the formula:

10



wherein

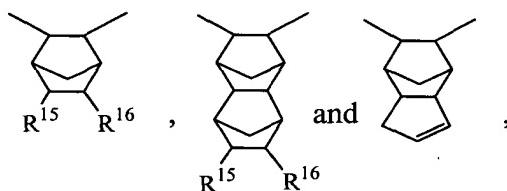
15 R^{11} is hydrogen or methyl;

R^{12} is hydrogen or methyl;

X' is selected from the group consisting of C_6-C_{10} aromatic group, C_6-C_{10} sulfonated aromatic group, C_5-C_6 cyclic aromatic group, and C_{1-10} alkoxy group;

Y' is selected from the group consisting of C_2-C_5 saturated aliphatic group, C_2-C_5

20 unsaturated aliphatic group,



25 wherein R^{15} and R^{16} are respectively selected from the group consisting of hydrogen, halogen, C_{1-10} alkyl group, C_{6-10} aromatic group, C_{6-10} fluoroaromatic group, C_{1-10} alkoxy

group, C₂₋₁₀ alkenyl group, C₇₋₁₁ aromatic alkyl group, C₈₋₁₂ aromatic alkenyl group, and C₇₋₁₁ alkyl aromatic group;

r is an integer from 0 to 25;

s is an integer from 0 to 25; and

5 t is an integer from 0 to 50;

provided at least two of r, s and t are not zero;

(b) reacting the first reagent with a second reagent at a temperature between 20 and 180°C, wherein the second reagent contains 1~75% by weight of at least one oxyalkene or polyoxyalkene having the formula

10 H₂N(Z'O)_qR¹⁸ or HO(Z'O)_qR¹⁸,

wherein

Z' is a C₂-C₅ aliphatic group;

q is an integer from 5 and 100; and

R¹⁸ is a C₁-C₅ aliphatic group or C₆-C₁₀ aromatic group;

15 (c) reacting the resultant mixture of (b) with an acidic reagent to form a carboxylated polymeric product, wherein the acidic reagent contains 1~10 % by weight of an inorganic acid or sulfuric organic acid; and

(d) treating the carboxylated polymeric product with an alkaline reagent, wherein the alkaline reagent contains 1~10% by weight of a compound having the formula M(OR¹⁹)_v,

20 wherein

M is an alkaline metal cation, alkaline earth metal cation, or ammonium;

v is the valence of M; and

25 R¹⁹ is selected from the group consisting of hydrogen, C₁₋₁₀ alkyl group, C₆₋₁₀ aromatic group, C₁₋₁₀ alkoxy group, C₇₋₁₁ aromatic alkyl group, C₈₋₁₂ aromatic alkenyl group, and C₇₋₁₁ alkyl aromatic group.

13. The process for manufacturing a concrete admixture additive according to claim 12,
wherein

r is an integer from 0 to 10;

s is an integer from 0 to 10; and

5 t is an integer from 0 to 25.

14. The process for manufacturing a concrete admixture additive according to claim 12,
wherein

r is an integer from 0 to 5;

s is an integer from 0 to 5; and

10 t is an integer from 0 to 25.

15. The process for manufacturing a concrete admixture additive according to claim 12,
wherein R¹¹ is hydrogen.

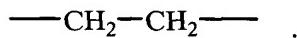
16. The process for manufacturing a concrete admixture additive according to claim 12,
wherein R¹² is hydrogen.

15 17. The process for manufacturing a concrete admixture additive according to claim 12,
wherein X' is phenyl.

18. The process for manufacturing a concrete admixture additive according to claim 12,
wherein X' is sulfonated phenyl.

19. The process for manufacturing a concrete admixture additive according to claim 12,

20 wherein Y' is



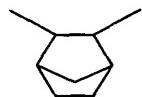
20. The process for manufacturing a concrete admixture additive according to claim 12,
wherein Y' is $\text{---CH}_2\text{---CH=CH---CH}_2\text{---} ,$

25 or $\text{---CH---CH}_2\text{---}$
 CH_2
 $\text{CH}_2 \diagup \diagdown$
 CH_2

or a mixture of both.

21. The process for manufacturing a concrete admixture additive according to claim 12,
wherein Y' is

5



22. The process for manufacturing a concrete admixture additive according to claim 12,
wherein Y' is

